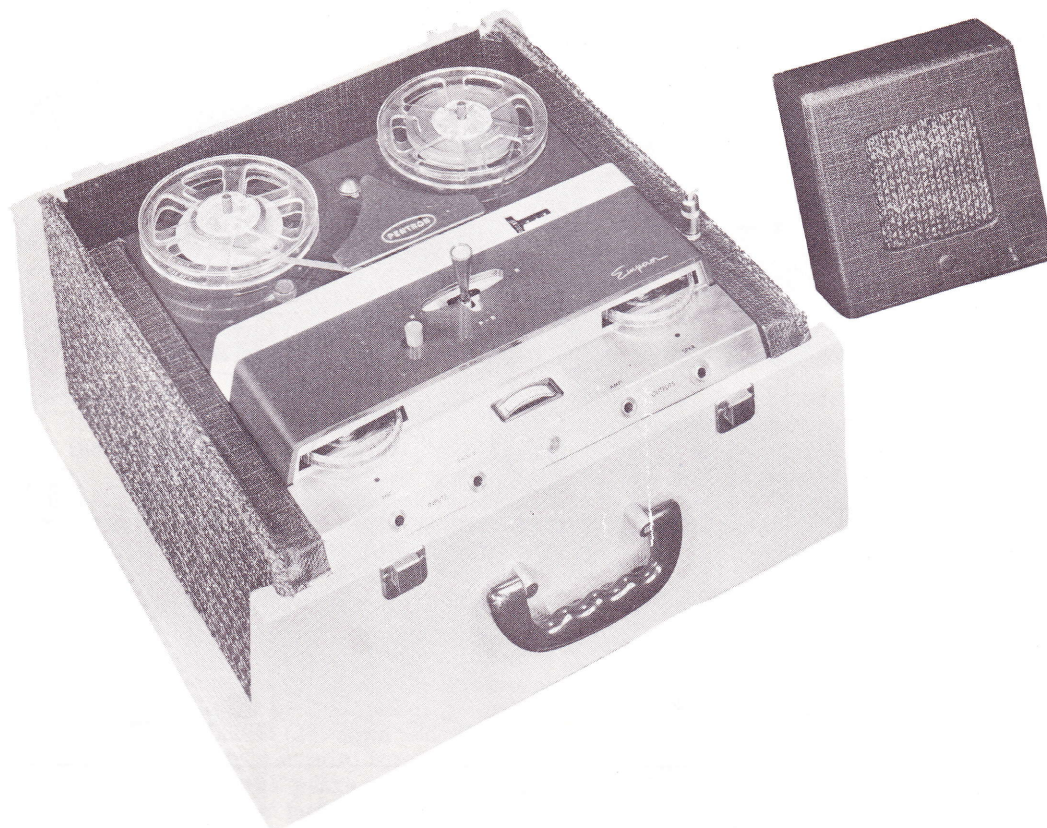




PENTRON  
MODEL HF-400



PENTRON  
MODEL HF-400

### GENERAL INFORMATION

The Pentron Model HF-400 utilizes mechanical and electrical facilities for making and playing back tape recordings. Since this unit employs the Pentron TM-56 tape transport mechanism, this service manual may be used when servicing the mechanical functions of any recorder using the TM-56 mechanism.

This recorder has two speeds (3 3/4 and 7 1/2 inches per second) and is designed for dual track recordings, giving two full length recordings on a single reel of recording tape. Any size reel up to 7" may be used on this machine. A VU Meter is used to simplify the recording level setting. Recordings can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speakers or an external speaker may be used through use of the "Ext. Spkr." jack.

Model HF-400 is designed to operate on 60 cycle, 110 to 125 volts, AC supply only. Before connecting to your line supply, be absolutely certain that it agrees with the above specifications.

MANUFACTURED by:

THE PENTRON CORPORATION  
777 S. TRIPP AVENUE  
CHICAGO 24, ILLINOIS

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HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

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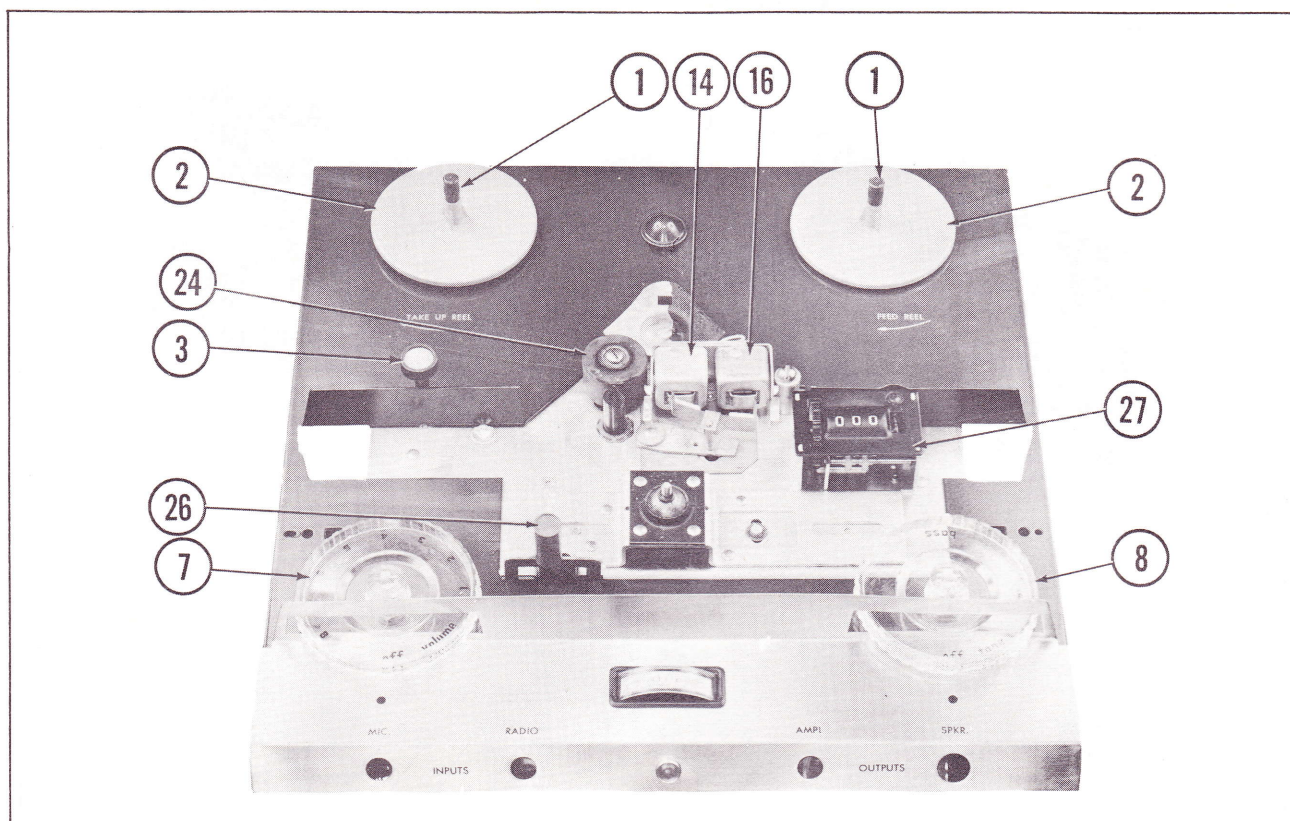


Figure 1

## FUNCTIONS OF THE CONTROLS

### Speed Control-

This recorder is designed to record and play back at two separate speeds,  $7\frac{1}{2}$ " per second, or  $3\frac{3}{4}$ " per second. Since quality of recording increases with the speed of the tape it is desirable to use the faster speed when recording musical programs. For voice and other types of recordings where maximum fidelity is not necessary, the slow speed is preferable since it doubles the playing time of a given size reel. To change speed, grasp the speed control shaft (3) and turn it clockwise. While holding it in the clockwise position push it down for fast speed, or pull it up for slow speed, then release.

NOTE: When recorder is not in use, the speed control should be set half-way between the two speed positions. A locator is provided for setting the control in this position.

### Volume Control (Amplifier On-Off)-

The switch on this control turns on the amplifier and leaves it in stand-by position when the "Motor On-Off" switch is in the "Off" position. Turning the "Volume" control clockwise increases the volume level for both playing and recording.

### Tone Control (Motor On-Off)-

This control starts and stops the mechanism drive motor. Turning the "Tone" control clockwise increases the bass response during playback. This control does not affect bass response during recording since the ideal position for recording is preset at the factory.

NOTE: Separate switches enable you to use amplifier in conjunction with radio tuner, phonograph, or P. A. System.

### "Unimagic" Single Lever Control-

Play, Record, Fast Forward and Fast Rewind may be selected with this control. To play, move lever toward front of unit. For fast forward, return control to neutral (upright) and pivot it to the left. To rewind, return control to neutral, then pivot it to the right. Brakes are automatically applied when "Unimagic" control is placed in neutral position.

### Record Lock Button-

When this button is down the machine is switched from a reproducer to a recorder. The recorder then erases tape passing in front of the erase head. To record, depress button at the same time "Unimagic" control is placed in the "Play" position. When the "Unimagic" control is returned to its neutral position, the record lock button is automatically disengaged.

### Index Counter-

Set counter to zero at the beginning of a reel by rotating the reset knob. Counter automatically gives an accurate guide for location of recorded material anywhere on the tape.

## OPERATING INSTRUCTIONS

### Threading The Tape-

1. Place a reel of tape on the right hand (feed reel) spindle so that the reel will turn clockwise when tape is pulled from the reel.



NOTE: This recorder uses "A" wound tape, i. e. the dull magnetic coated side faces the center of the reel. If the tape used is type "B" (coated side facing outward) recordings will be made at a very low sound level and playback will be inaudible.

2. Place an empty reel on the left hand spindle (take-up reel). Be sure that both reels are engaged with the 3 fins on each spindle.

3. Reel out about 16" of tape and hold a section straight with both hands. Drop tape into tape slot. Thread the end of the tape into one of the slots in the outer surface of the take-up reel hub. Rotate take-up reel several turns to secure tape to reel and to take up slack between reels.

#### To Record From Microphone-

1. Insert the microphone plug into the "Mic." jack.

2. Turn the "Volume-On-Off" control to the "On" position. This supplies power to the amplifier.

3. Turn the "Tone-On-Off" control to the "On" position. This supplies power to the motor.

4. Before making a recording it is generally advisable to set the volume at the proper level. To do this, hold the record lock button (26) down and while talking into the microphone in a natural tone, adjust the "Volume" control so that the peaks of the meter deflection do not go past zero, or into the red area of dial calibration.

5. While holding record lock button (26) in the down position, move the "Unimagic" control (5) to the Play position. A recording is now being made and any sounds entering the microphone will be recorded on the tape.

#### To Record From Radio, TV, Or Phonograph-

1. Using a standard interconnecting cable such as the Pentron accessory cord X-166, fasten the two clips to the loud speaker terminals of the external source, and insert the plug on the other end into the "Radio" input on the recorder.

#### To Monitor A Recording-

By plugging a set of earphones in the "Ampl." jack the recording may be monitored. In an emergency the microphone will serve as an earphone if plugged into this same jack. Continued use of the microphone in this fashion is not recommended since permanent damage may result.

#### To Play A Recording-

1. Move the Unimagic control (5) to the "Play" position.

2. Adjust "Volume" and "Tone" controls for desired listening level.

#### Dual Track Recording-

This recorder is designed so that only one-half the tape width is recorded at a time, thereby resulting

in dual-track recording. To make dual-track recording proceed as follows:

1. After a reel of tape has been recorded, i. e. all the tape wound onto the take-up reel, place the "Unimagic" control (5) in neutral (upright) position.

2. Remove the reels from the recorder, turn the full reel over and place it on the right-hand spindle and place the empty reel on the left-hand spindle.

3. Thread the tape and proceed with the recording.

4. After the second track has been recorded the first track is ready to be played, without rewinding, as follows:

(a) Place the full reel on the right-hand spindle and the empty reel on the left-hand spindle.

(b) Thread the tape and set the controls as described under "To Play A Recording".

### FUNCTIONS OF PRINCIPAL PARTS

#### Unimagic Control (5)-

This control has three positions:

1. "P-R" -- Play And Record Position.

When the "Unimagic" control (5) is moved into the "P-R" position, the play-record control cam (37) is actuated by the shaft in the control. This pivoting movement of cam (37) allows the pressure roller slide plate (38) to be activated by the pressure roller spring (53) which engages the pressure roller (24) with the capstan (58) which in turn drives the tape at a constant speed. The take-up adjusting lever (50) which is held against the end of slide plate (38) by the take-up spring (52), is pivoted as the slide plate moves forward. This causes the boot on take-up adjusting spring (48) to press against the equalizer bar (66) with just enough pressure for the take-up belt (78) to become taut and to rotate the take-up pulley (79) so as to wind tape on the reel. This acts as a clutch by allowing the belt to slip due to the slower speed of the capstan. Also, by the movement of slide plate (38), pressure is removed from the pressure finger lever (40), which has been engaged with the pressure pad pivot pin on the pressure pad carrier (32), which holds the pressure pads away from the heads. When pressure is removed from the pressure finger lever (40) the pressure pad spring (41) pulls the pressure pad carrier (32) inward causing pressure pads (22) to bear against the tape and hold it in positive contact with the heads.

NOTE: Mechanical functions explained above pertain to both Play and Record.

2. "R" -- Rewind.

When the "Unimagic" control (5) is pivoted to the "R" position the wind-rewind slide plate (42) is activated by the shaft under the "Unimagic" control. The wind-rewind slide plate (42) in turn pushes on the tie bar (61) which bears against the equalizer bar (66) via an elastic stop nut and spacer which causes the equalizer bar (66) to pivot counter-clockwise. The pivoting of the equalizer bar makes the feed belt (60) taut which in turn drives the feed pulley (72) at a high rate of speed.



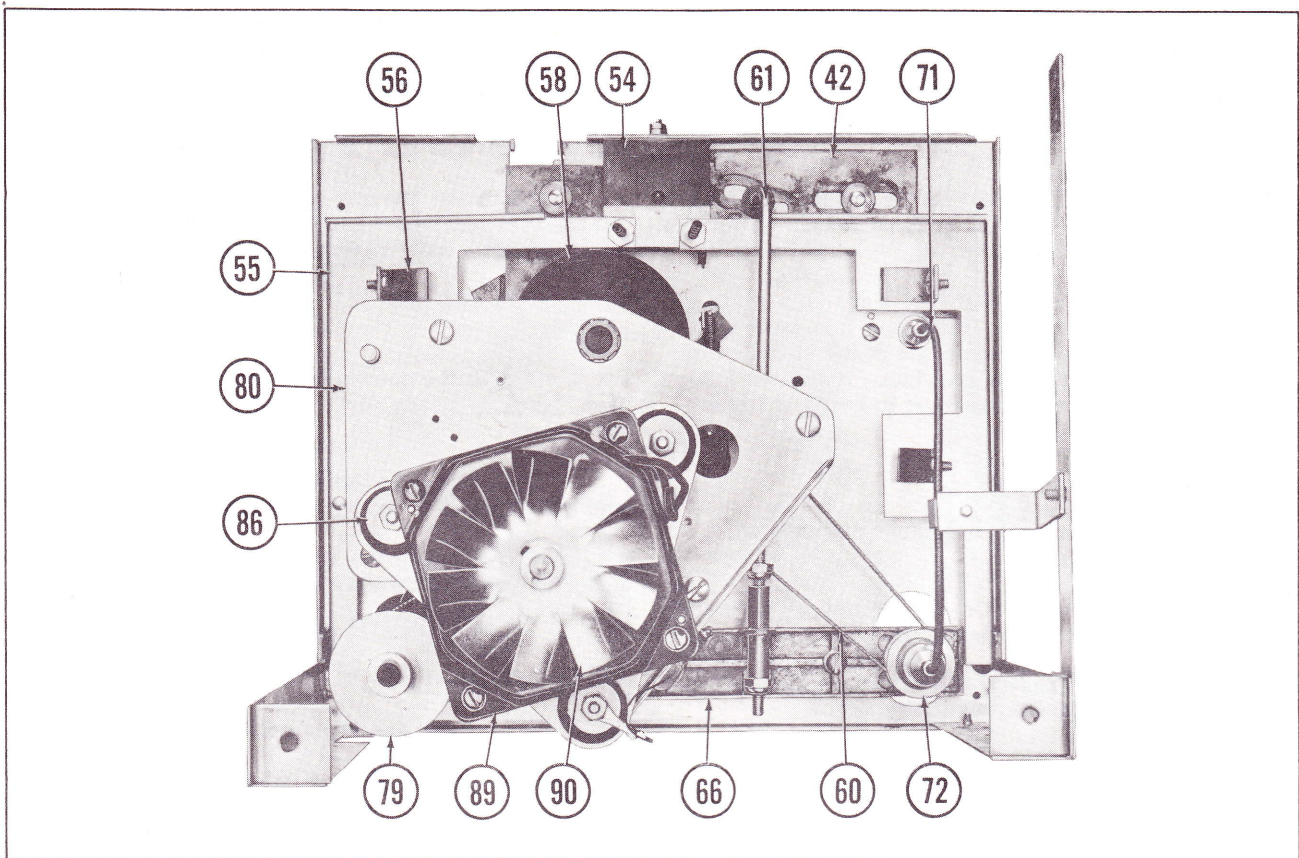


Figure 2

### 3. "W"(Wind) — Fast Forward.

When "Unimagic" control (5) is pivoted to the "W" position, the wind-rewind slide plate (42) is activated by the shaft under the "Unimagic" control. The wind-rewind slide plate (42) in turn pulls on tie bar (61) which bears against the equalizer bar (66) via an elastic stop nut and spacer which causes the equalizer bar to pivot clockwise. The pivoting of equalizer bar (66) makes the take-up belt (78) taut which in turn drives the take-up pulley (79) at a high rate of speed.

#### Brakes-

When the "Unimagic" control (5) is in the neutral (upright) position the shaft at the end of this control pushes against the control spring plate (54). The control spring plate then activates the brake arms (55) and (55A) via the brake adjustment screws (67). This action causes the brake arms to pivot, thus putting the brake lining to bear against the under side of the reel rests (2). The brake linings can be seen by removing spindle caps (1) and reel rests (2). When the "Unimagic" control is put in either Play, Rewind, or Wind position, the control spring plate (54) is released thus deactivating the brakes. When control (5) is returned to neutral from the rewind position the control spring plate (54) is pivoted counter-clockwise thus activating the left brake arm (55) before the right brake arm (55A) in order to avoid spillage of tape. When returning control (5) to neutral from the Fast Forward "W" position the control spring plate (54) is pivoted clockwise thus activating the right brake arm (55A) before the left brake arm (55) in order to avoid spillage of tape.

### ADJUSTMENTS

#### Equalizer Bar Adjustments-

This adjustment is made by loosening socket head screw (11) and shifting equalizer bar (66) forward or backward. Make adjustments as follows:

First, remove spindle caps (1) and reel rests (2). With the "Unimagic" control (5) in the neutral (upright) position, move the equalizer bar (66) to a position such that the take-up spindle (69) is on the verge of spinning without any pressure being exerted on the equalizer bar (66) from the tie bar (61). After adjustment is made be sure socket head screw (11) is tightened securely. The equalizer bar adjustment screws (68) are adjusted by turning both screws down until they hit the mechanism plate. Then back the screws off 1/4 of a turn and lock them down with lock nuts (67). This adjustment acts as a stabilizer for the equalizer bar.

NOTE: To gain access to socket head screw (11) an aluminum cap covering the screw must be pryed off.

#### Tie Bar Pressure Adjustment-

The amount of pressure exerted on the equalizer bar (66), by means of the tie bar (61), is adjusted by movement of the elastic stop nuts (62). The elastic stop nuts should be adjusted so as to allow the Wind and Rewind positions on the Unimagic control to function freely and still exert enough pressure on the equalizer bar (66) for adequate Wind and Rewind performance. To determine if performance is adequate



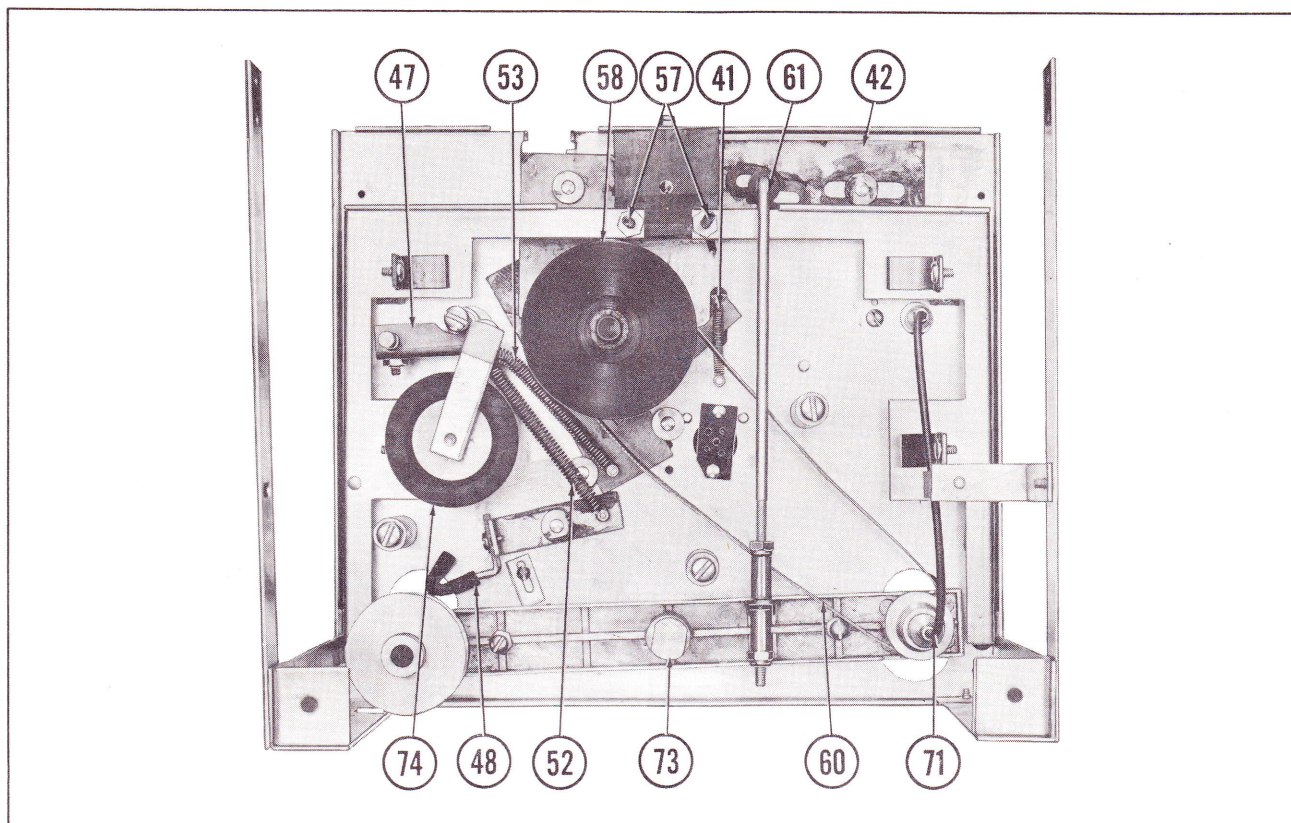


Figure 3

test the Rewind with a full 7" reel on the feed side. To test for Wind place full 7" reel on take-up side.

NOTE: The tie bar (61) must be readjusted whenever equalizer bar (66) is readjusted.

#### Take-Up Adjustment-

This adjustment is accomplished by bending the take-up adjusting spring (48). Bending the spring closer to the equalizer bar (66) increases pressure on the equalizer bar thus giving a stronger take-up. Bending the spring away from equalizer bar (66) gives a weaker take-up. If bending spring (48) does not give adequate adjustment, loosen the screw which mounts the spring and move the spring in the proper direction for optimum adjustment.

#### Brake Adjustment-

After equalizer bar adjustments have been made the brakes are ready to be adjusted. First put a full 5" reel of tape on the feed reel side, and an empty 7" reel on the take up side. Wind about 1/4 of the tape on to the 7" reel. While operating the Unimagic control from "Rewind" to "Neutral", tighten the left brake adjusting screw (57) until the reels stop in about 1 revolution without spilling tape. Next, reverse the procedure by placing the 5" reel of tape on the take-up side and the empty 7" reel on the feed side. Adjust the right brake adjusting screw (57) so that the reels stop in "Fast Forward" to "Neutral" in about 1 revolution. Next put a full 7" reel of tape on the feed side and an empty 7" reel on the take-up side. Run about 100' of tape on to the take-up reel and go directly into "Rewind". When the take-up reel is almost empty, place the Unimagic control in "Neutral". The reels should stop in about 3 or 4 revolutions without spilling

tape. Next, reverse the procedure by placing the full 7" reel on the take-up side and rewind about 100' of tape on the feed reel. Go directly into "Fast Forward" until the feed reel is almost empty. Then place Unimagic control in "Neutral". The reels should stop in about 3 or 4 revolutions without spilling tape. After brakes are adjusted, check the take-up and rewind. If the take-up or rewind has been affected, readjust. If it is difficult to get adequate take-up, brakes may have been adjusted too tight. Then readjust brakes to rectify this condition.

#### Idler And Speed Change Adjustment-

Loosen the set screw and nut which secures idler shaft (46) to idler channel (47). Adjust position of idler channel assembly (47) so that the full perimeter of idler wheel (74) rides on the perimeter of motor pulley (76). While adjusting, position the height of idler shaft (46) so that its roll pin will locate in the slot in the shaft housing. Idler wheel (74) must be adjusted so as not to ride on the edge of the motor pulley.

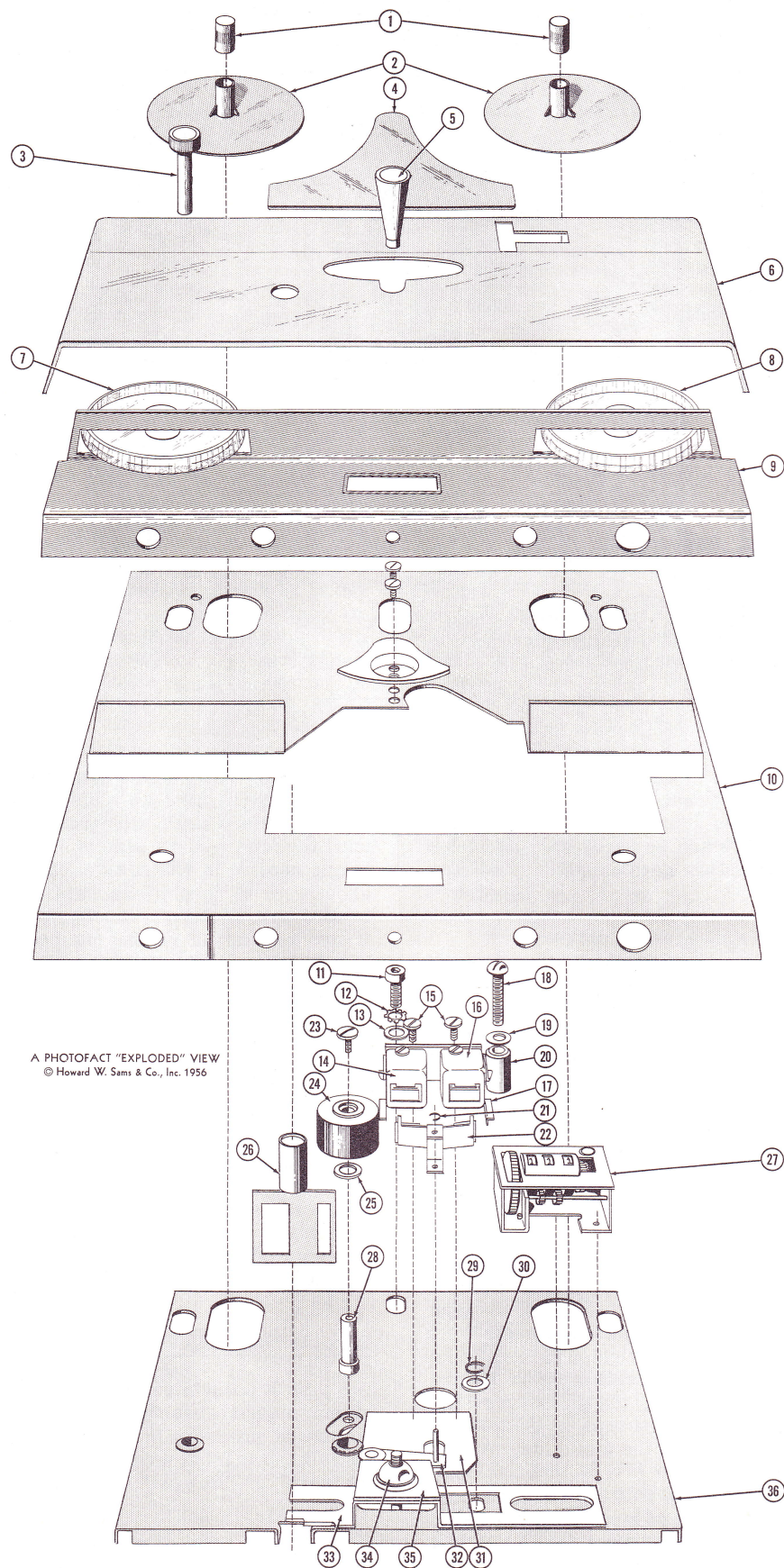
#### Flexible Shaft Adjustment-

This adjustment is made by shifting the cable clamp support bracket to a position so that a light downward pressure is exerted of flexible shaft (71) so as to keep it from whipping when machine is in "Fast Forward" or "Rewind" position.

#### Play-Record Head Alignment-

To align the play-record head (14) a special head alignment wrench is necessary. An alignment tape is recommended for accurate alignment.



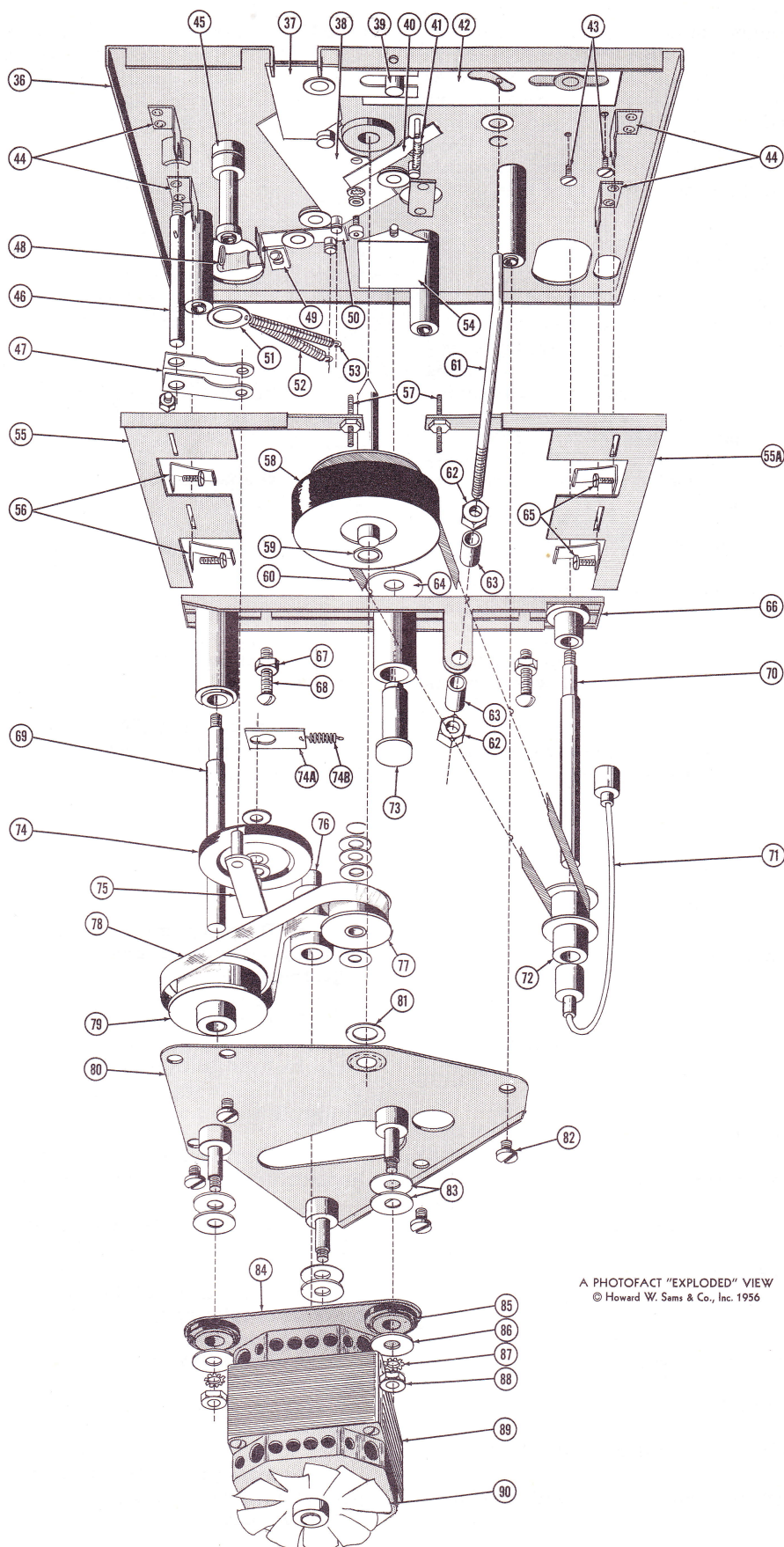


A PHOTOFAC "EXPLODED" VIEW  
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FIGURE 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.



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A PHOTOFAC "EXPLODED" VIEW  
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FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.



To align head for azimuth, slip the alignment wrench over the head can and rock head while tape is playing until maximum output is obtained. This can be readily heard because the high frequency notes will be apparent rather than the low mellow sounds. After the head is aligned it must be secured by tightening the back screw and sealing it with household cement. If the height of the head has been disturbed, the center line of the head and pole piece must be lined up so that the pole piece is at the same level as the tape guides and tape.

#### How To Replace A Pole Piece-

Remove the head assembly by loosening the two mounting screws which hold down the head assembly. The pole piece is then removed by inserting a non-magnetic screw driver between the head can and the pole piece and prying the pole piece loose by breaking the glue joint. The new pole piece is then inserted between the two laminations provided for each leg of the pole piece and gluing it from the sides with household cement. The head assembly is then screwed into place and the heads aligned.

### **LUBRICATION**

Although this mechanism is prelubricated at the factory, replacement of parts require that they be lubricated in order to insure proper functioning. No part need more than a slight film of grease where grease is specified or one drop of oil where oil is specified.

The following parts require greasing with fibre grease or a similar compound:

1. Play-record cam (37).
2. Wind-rewind slide plate (42).
3. Control spring (54).
4. Control shaft (34), bottom end.
5. Slide plate assembly (38).
6. Pressure roller bearing (24) and (28).
7. Belt pulley (77).
8. Tie bar (61), front end.
9. Idler wheel bearing (74).
10. Clamp for flexible cable (71).
11. Record lock (26).
12. Equalizer bar pivot stud (66).
13. Take-up adjusting lever (50).
14. Pressure arm lever (40).
15. Pressure finger carrier assembly (32).

The following parts require oiling with 10 W lubricating oil:

1. Feed spindle assembly (70).
2. Take-up spindle assembly (69).

### **3. Flywheel assembly (58).**

**CAUTION:** Do not clean oilite bearings with cleaning solvent. Oilite bearings are permanently oiled, but in some instances where the bearings appear dry a drop of oil will be necessary.

### **CLEANING**

The play-record head (14), erase head (16), capstan (58), and pressure roller (24) are subject to an accumulation of tape coating oxide which is worn off the tape as it passes these parts. Clean these parts with a soft cloth and alcohol after every ten hours of running time.

### **TROUBLES AND PROBABLE REMEDIES**

#### No Rewind-

1. Glazed idler wheel (74). Rub off slickness with a clean, dry, lint free cloth.

2. Faulty tie rod (61) adjustment. Adjust as described under "Tie Bar Pressure Adjustment".

3. Slippage of idler wheel (74) against flywheel or motor pulley. Clean idler wheel, flywheel, and motor pulley with alcohol. If idler wheel still slips, replace.

4. Idler wheel (74) not adjusted properly. Adjust as described under "Idler And Speed Change Adjustment".

5. Binding feed reel spindle (70). Loosen the set screw in rewind pulley (72). Clean bearing and spindle surface and reinstall leaving .005 and play in assembly.

6. Dragging brake linings. Brakes not properly adjusted. Adjust brakes as described under "Brake Adjustment".

7. Bent reel rest (2). Replace reel rest.

8. Feed belt (60) loose or broken. Replace.

#### Flutter-

1. Motor pulley (76) not concentric to motor shaft. Replace motor and pulley assembly.

2. Excessive take-up. Adjust as described under "Take-Up Adjustment".

3. Take-up belt (78) not installed properly. Remove and replace belt as shown on Exploded View.

4. Dirty flywheel bearings. Clean bearings and flywheel shaft.

#### Wow-

1. Foreign matter on idler wheel (74), motor pulley (76), flywheel (58), or take-up pulley (79). Clean all wheels and pulleys with clean cloth and alcohol.

2. Defective idler wheel (74). Replace.

3. Defective pressure roller (24). Replace.



4. Reel spindles (69) and (70) binding. Loosen set screw on pulley, clean bearing and spindle surface. Reinstall leaving .005 end play in assembly.

5. Brakes improperly adjusted. Adjust as described under "Brake Adjustment".

#### No Wind (Fast Forward)-

1. Binding take-up spindle (69). Loosen set screw in take-up pulley (79), clean bearing and spindle surface and reinstall leaving .005 end play in assembly.

2. Take-up belt (78) loose, twisted, or broken. Replace belt.

#### Tape Spillage Or Insufficient Braking-

1. Faulty brake adjustment. Adjust brakes as described under "Brake Adjustment".

2. Worn brake linings. Replace linings and re-adjust brakes.

3. Worn-out or loose control spring (54). Adjust or replace control spring.

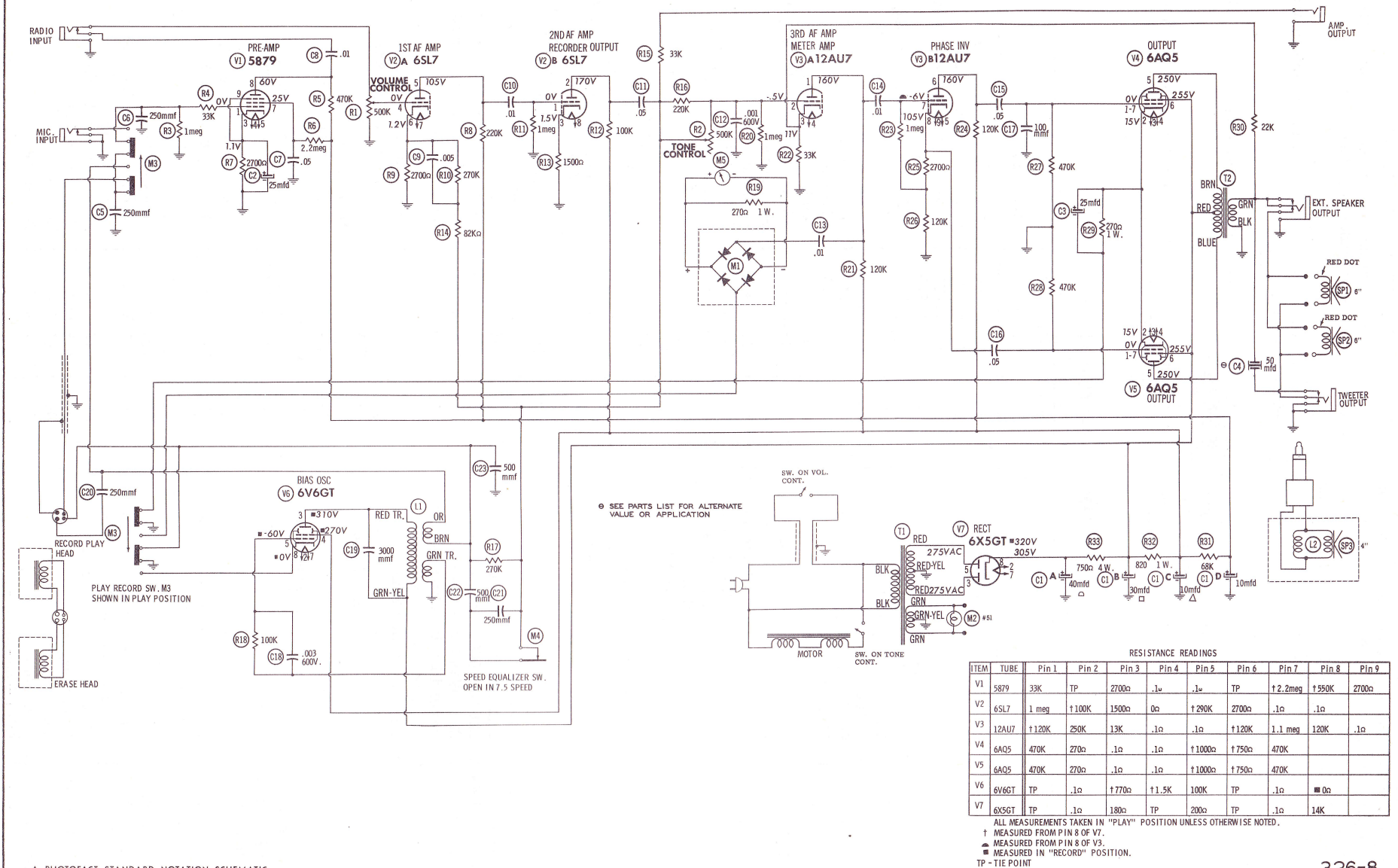
4. Excessive play in equalizer bar (66). Readjust equalizer bar as described under "Equalizer Bar Adjustments".

### MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	714-A-276	Reel Spindle Cap	48	964-A-121	Take-Up Adjusting Spring
2	765-B-12	Reel Rest	49	711-A-209	Take-Up Stop Plate
3	714-A-474	Idler Shaft Knob	50	964-A-129	Take-Up Adj. Lever Assy.
4		Head Cover Casting	51	711-A-207	Spring Ring
5	714-A-473	Control Knob, Unimagic	52	712-A-5	Take-Up Pressure Spring
6		Control Plate Casting	53	712-A-6	Pressure Roller Spring
7		Volume Control Knob	54	742-A-23	Control Spring
8		On-Off-Tone Control Knob	55	711-C-139	Left Brake Arm
9		Front Escutcheon	55A	711-C-140	Right Brake Arm
10		Top Cover Panel	56	742-B-1	Brake Pivot Spring
11	613-10896	#10-32 x 1/2" Sckt. Hd. Cap Screw	57	613-81606	#8-32 x 1" Allen Hd. Cup Pt. Set Screw
12	617-1134	#10 Ext. Tooth Lockwasher	58	714-A-471	Capstan
13	616-1144	.187 x .437 x .031 Plain Washer	59	871-23	Felt Washer
14	943-A-11	Record Head - Dual Track	60	899-A-2	Feed Belt, .312 x 17.25
15	611-80454	#8-32 x 1/4 B.H.M.S.	61	714-B-3	Tie Bar
16	943-A-10	Erase Head - Dual Track	62	615-1124	#10-32 Elastic Stop Nut
17	711-A-345	Tape Guide	63	714-A-182	Tie Bar Spacer
18	611-11615	#10-32 x 1" Rd. Hd. Mach. Screw	64	714-A-185	Equalizer Spacer
19	616-1144	.187 x .437 x .031 Plain Washer	65	611-80454	#8-32 x 1/4 B.H.M.S.
20	714-A-102	Dummy Stop	66	964-B-19	Equalizer Bar & Bearing Assy.
21	619-144	.125 "C" Washer	67		Lock Nut
22	964-A-124	Pressure Pad & Plate Assy.	68		Equalizer Bar Adj. Screw
23	611-60353	#6-32 x 3/16 B.H.M.S.	69	714-A-462	Take-Up Reel Spindle
24	964-A-116	Capstan Pressure Roller	70	714-A-463	Feed Reel Spindle
25	616-A-3169	.250 x .500 x .010 Clock St'l. Washer	71	529-A-16	Flexible Shaft
26		Record Lock Button	72	714-A-135	Rewind Pulley
27	498-A-2	Counter	73	714-A-183	Equalizer Bar Pivot Stud
28	714-A-47	Capstan Roller Shaft	74	964-A-115	Idler Wheel
29	619-146	.188 "C" Ring	74A	711-A-346	Idler Spring Clip
30	619-A-24	.190 x .375 x .010 Clock St'l. Washer	74B		Idler Spring
31	711-A-347	Shield Plate	75	964-A-139	Idler Bracket Sub Assy.
32	964-A-114	Pressure Pad Carrier Assy.	76	714-A-167	Motor Pulley
33	711-B-134	Control Support	77	714-A-171	Belt Pulley
34	964-A-268	Control Assembly	78	899-A-3	Take-Up Belt, .312 x 12.625
35	711-A-592	Ball Retainer	79	964-A-91	Take-Up Pulley
36	711-C-137	Mechanism Plate	80	711-B-75	Motor Support Plate
37	711-B-135	Play & Record Control Cam	81	616-A-9209	.377 x 5/8 x .01 Clock St'l. Washer
38	964-A-23	Slide Plate Assy.	82	611-10554	#10-32 x 5/16 B.H.M.S.
39	714-A-472	Control Shaft	83	711-A-341	.218 x 7/8 x 1/32 Motor Mtg. Washer
40	711-A-330	Pressure Arm Lever	84	711-A-342	Motor Plate
41	712-A-21	Pressure Pad Spring	85	855-A-8	Shock Mount
42	711-B-133	Wind & Rewind Slide Plate	86	711-A-341	.218 x 7/8 x 1/32 Motor Mtg. Washer
43	611-60454	#6-32 x 1/4 B.H.M.S.	87	617-8114	#8 Int. Tooth Lockwasher
44	711-A-594	Brake Support	88	614-8114	#8-32 Hex. Nut
45	714-A-161	Plate Stud	89	367-B-6	Motor
46	714-A-336	Idler Shaft	90	717-A-20	Motor Fan
47	711-A-343	Idler Channel			

PENTRON  
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# **PARTS LIST AND DESCRIPTIONS** TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES	ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	5879		V4	Audio Output	6AQ5	
V2	1st AF Amplifier - Recorder Output	6SL7		V5	Audio Output	6AQ5	
V3	3rd AF Amplifier - Meter Amplifier - Phase Inverter	12AU7		V6	Bias Oscillator	6V6GT	
				V7	Rectifier	6X5GT	

## **ELECTROLYTIC CAPACITORS**

ITEM No.	RATING		PENTRON PART No.	REPLACEMENT DATA				SPRAGUE PART No.
	CAP.	VOLT.		AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	
C1A	40	350		AFH4-06-25	D017	FP428	TM-4029	Q-320
C1B	30	350			BR1235			
C1C	10	350						
C1D	10	350						
C2	25	25		PRS25V25	BR252	TC26	TD-25-25	FM-0295
C3	25	25		PRS25V25	BR252	TC26	TD-25-25	FM-0295
C4	50	25	Note 1	PRS25VNP50	BRH251 *	TC2501 *		MTL-2310 *
					BRH251	TC2501		MTL-2310

Note #1. Non-Polarized Electrolytic Unit.  
\* Connect Negative Leads Together.  
† Unit Must Be Ordered From Migr.

## **FIXED CAPACITORS**

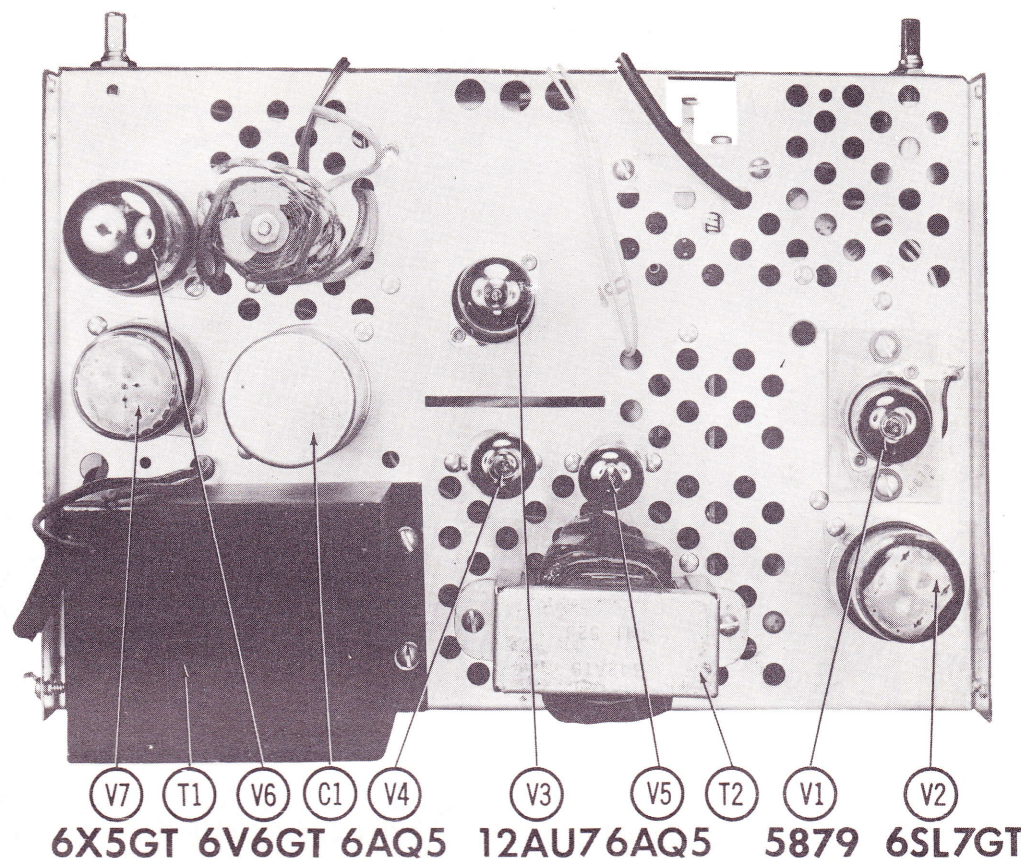
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		PENTRON PART No.	REPLACEMENT DATA				NOTES
	CAP.	VOLT.		CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERE PART No.	MALLORY PART No.	
C5	250			BPD-00025	DD-251	G053	811-251	UC-5325
C6	250			BPD-00025	DD-251	G053	811-251	UC-5325
C7	.05	400		BPD-05	DF-503	CUB4S5	PT415	5GA-T25
C8	.01	400		SI5000	D6-103	CUB4S1	GP3-333-103	4TM-S5
C9	.005	600		BPD-01	D6-103	CUB4S1	GP2-333-502	4TM-SI
C10	.01	400		BPD-05	D6-103	CUB4S1	GP3-333-103	4TM-SI
C11	.05	400		SI1000	D6-102	CUB4S1	GP2L-102	4TM-S5
C12	.001	600		BPD-01	D6-103	CUB4S1	GP3-333-103	4TM-D1
C13	.01	400		BPD-05	DF-503	CUB4S1	PT411	4TM-SI
C14	.01	400		BPD-05	DF-503	CUB4S1	PT415	4TM-S5
C15	.05	400		BPD-05	DF-503	CUB4S1	PT415	4TM-S5
C16	.05	400		SI100	D6-101	5W5T1	1FM-31	4TM-S5
C17	100	500		SI3000	D6-302	CUB6D3	MC235	4TM-S5
C18	.003	600		1464-003		IR5D3	MS-23	6TM-D3
C19	3000	500		BPD-00025	DD-251	G053	811-251	5GA-T25
C20	250			BPD-00025	DD-251	G053	811-251	5GA-T25
C21	250			BPD-00025	DD-501	K061	811-501	5GA-T5
C22	500			BPD-0005	DD-501	K061	811-501	5GA-T5
C23	500			BPD-0005	DD-501	K061	811-501	5GA-T5

## **CONTROLS**

ITEM No.	RATING		PENTRON PART No.	REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS		CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	
R1A	500K2	1/2		B-60-S	A47-500K-Z	Q13-133	Volume
B	Switch			Not Req.	SWE-12	76-1	Not Req.
R2A	500K2	1/2		Not Req.	A47-500K-Z	Q13-133	Attach to R1A
B	Switch			Not Req.	SWE-12	76-1	Tone
C	Switch			Not Req.	SWE-12	76-1	Not Req.
							Attach to R2A

# **CHASSIS—TOP VIEW**





# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES	REPLACEMENT DATA		NOTES
	OHMS	WATT	PENTRON PART No.	IRC PART No.		PENTRON PART No.	IRC PART No.	
R3	1Meg							
R4	33K		BTS-1Meg	BTS-470K				
R5	470KΩ		BTS-33K	BTS-120K				
R6	2.2Meg		BTS-470K	BTS-33K				
R7	2700Ω		BTS-2.2Meg	BTS-120K 5%				
R8	220KΩ		BTS-2700	BTS-120K 5%				
R9	2700Ω		BTS-220K	BTS-120K 5%				
R10	270KΩ		BTS-2700	BTS-120K 5%				
R11	1Meg		BTS-270K	BTS-120K 5%				
R12	100KΩ		BTS-1Meg	BTS-470K				
R13	1500Ω		BTS-100K	BTS-270				
R14	82KΩ		BTS-1500	BTS-22K				
R15	33KΩ		BTS-82K	BTS-68K				
R16	220KΩ		BTS-33K	BTA-520				
R17	270KΩ		BTS-220K	PW4-750				
R18	100KΩ		BTS-270K					

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	PENTRON PART No.	Merit PART No.	Stancor PART No.	Triad PART No.
T1	117VAC	575VCT	8.3VCT	352-33			
	③ .50A	③ .068A	③ 2.8A				

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	PENTRON PART No.	Merit PART No.	Thordarson PART No.	Triad PART No.	
T2	7KΩ	3-4Ω	342-19	Z1009 ①	A-2901	A-3870	① Drill one new mounting hole.

## SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA		NOTES
	SIZE	FIELD	PENTRON PART No.	QUAM PART No.	
SP1	6"	PM	345-15	229SI	
SP2	6"	PM	345-15	229SI	
SP3	4"	PM	345-18	223SI	

## COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PENTRON PART No.	MEISSNER PART No.	MILLER PART No.	
L1	Bias Osc. Coil			311-13			
L2	Speaker Shunt Coil	.2Ω		341-1			.3 Henry

## SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
		CURRENT	PENTRON PART No.	FEDERAL PART No.	MALLOY PART No.	
M1			026-1B1-Q	147B1B1	VIBP	

## MISCELLANEOUS

ITEM No.	PART NAME		REPLACEMENT DATA		NOTES
	PART No.	PENTRON PART No.	PART No.	PART No.	
M2	Pilot Light				
M3	Switch	534A7			#51
M4	Switch				Play-Record 64PDT - Slide Type
M5	Meter				Speed Equalizer Recording Level

# CHASSIS—BOTTOM VIEW

